

Full Length Research Paper

Lepidoptera fauna in Akdağmadeni region of Yozgat, Turkey

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The histories of the researches on the Lepidoptera of Yozgat are given. This study was carried out in Akdağlar located in Akdağmadeni district (Yozgat, Turkey), during the years 1999 to 2000. The study aimed to collect data on Papilionoidea and Hesperioidea species, their distribution and current status. Butterflies samples were caught with sweep nets from 43 localities during the field work. 121 species belonging to seven families and two super families were identified. 74 out of 121 species which were identified in this study are first records for the Lepidoptera fauna of Akdağmadeni and 25 out of them are first records for Yozgat province. According to literature review and collection of data, 139 species recorded from Yozgat were evaluated.

Key words: Fauna, Lepidoptera, Akdağlar, Akdağmadeni, Yozgat, Turkey.

INTRODUCTION

In terms of fauna of Lepidoptera in Yozgat, there is no comprehensive investigation. Lederer (1855) is among the first publications on the Anatolian Lepidoptera. In this study, the materials which were collected by Kindermann from Amasya, Tokat, Sivas, Diyarbakır and Mardin were evaluated. There are no record about Yozgat and its surroundings.

Staudinger (1878 to 1881) in his works on the fauna of Anatolia, evaluated the collected material from Amasya and other than compiling all the faunistic records about the Lepidoptera of Anatolia until that day. However in this study, no mention of Yozgat and its surroundings was made. Staudinger and Rebel (1901), in their wide-ranging published studies in catalog of Lepidoptera of Palaearctic region did not mention the Lepidoptera of Yozgat. Fruhstorfer (1911) described subspecies *Satyrus geyeri aristonichus* from Amasya. This taxon also was found later in Yozgat.

Bryk and Eisner (1931) described the *Parnassius mnemosyne* ssp. *angorae* on the basis of samples collected from localities "Keskatepe" from Yozgat. Then,

this name was evaluated as a junior synonym of subspecies *caucasica* (Hesselbarth et al., 1995).

During the naming, the taxon of *Eumenis briseis hyperleucaon*, Verity (1937) evaluated the materials collected by Phillips (British officer) at the "Pine Woods" [Çamlık National Park] (vicinity of Yozgat) in 1918. Then, this name has been as junior synonym of the *Chazara briseis meridionalis* (Hesselbarth, et al., 1995).

Verity (1939) also described the subspecies *Lysandra albicans parabellargus* from material collected by Philips in 1918 from "Pine Wood" in vicinity of Yozgat.

However, this is believed to be probably either an individual form, or a hybrid (Kudrna, 1983). The information about this taxon was not mentioned by Hesselbarth et al. (1995).

Therefore, this study was conducted in Akdağlar (Akdağmadeni) for the determination fauna of Lepidoptera in the area. This study is important since it is the first and comprehensive study on Lepidopteran species in Akdağmadeni (Yozgat).

MATERIALS AND METHODS

The field studies were carried out during the years 1999 to 2000

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between April and August in 43 different localities and habitat types in altitudes between 1160 to 2100 m in Akdağlar mountains (Akdağmadeni) from Yozgat province. Specimens were collected using a sweep net. Collected specimens were killed in killing jars with ethyl acetate. During the collection, the collection date, name of the locality and altitude were noted on a piece of envelope for each specimen and field notebook. Each specimen was then kept in the envelope and all materials were brought to the laboratory for preparation and identification. All the butterfly specimens were pinned with wings spread, dried, and put into collection boxes. For identification of specimens, different studies such as Hesselbarth et al. (1995), Tolman (1977) and first author's collections of comparative materials were used.

The specimens collected from the study area were taken from different stations during 43 field studies. These stations (Number of Locality) are chronologically listed in Table 1.

RESULTS

A total of 121 species belonging to seven families and two super families of the order Lepidoptera were identified. The highest number of species belonged to Lycaenidae (48, 39.7%), followed by Argynniidae (19, 15.7%), Satyridae (18, 14.9%), Pieridae (17, 14%), Hesperidae (14, 11.6%), Papilionidae (4, 3.3%) and Libytheidae (1, 0.8%). The number of species in each family and their ratios to the families are given in Table 2 while the species which were identified in Akdağmadeni (Yozgat) and the number of locality (Table 1) with number of samples are listed in Table 3.

The systematic list of species according to phylogenetic rules (Koçak and Kemal, 2009) was given under the super family and family to which they belongs also cited as follows.

Order: LEPIDOPTERA

Suborder: RHOPALOCERA

Superfamily: PAPILIONOIDEA Latreille, (1802)

Family: PAPILIONIDAE Latreille, (1802)

Papilio machaon Linnaeus, 1758

Iphiclides podalirius (Linnaeus, 1758)

Zerynthia (Allancastris) deyrollei (Oberthür, 1869)

Parnassius (Driopa) mnemosyne (Linnaeus, 1758)

Family: PIERIDAE Duponchel, (1835)

Leptidea duponcheli (Staudinger, 1871)

Leptidea sinapis (Linnaeus, 1758)

Anthocharis cardamines (Linnaeus, 1758)

Anthocharis damone Boisduval, 1836

Anthocharis gruneri Herrich-Schäffer, [1851]

Aporia crataegi (Linnaeus, 1758)

Euchloe ausonia (Hübner, [1804])

Pieris (Artogeia) ergane (Geyer, [1828])

Pieris (Artogeia) pseudorapae Verity, 1908

Pieris (Artogeia) rapae (Linnaeus, 1758)

Pieris brassicae (Linnaeus, 1758)

Pontia edusa (Fabricius, 1777)

Colias aurorina Herrich-Schäffer, [1850]

Colias crocea (Fourcroy, 1785)

Colias alfacariensis Ribber, 1905

Gonepteryx farinosa (Zeller, 1847)

Gonepteryx rhamni (Linnaeus, 1758)

Family: LIBYTHEIDAE Boisduval, 1833

Libythea celtis (Laicharting, 1782)

Family: ARGYNNIDAE Duponchel, [1835]

Limenitis reducta Staudinger, 1901

Nymphalis antiopa (Linnaeus, 1758)

Nymphalis polychloros (Linnaeus, 1758)

Aglais urticae (Linnaeus, 1758)

Inachis io (Linnaeus, 1758)

Vanessa atalanta (Linnaeus, 1758)

Vanessa cardui (Linnaeus, 1758)

Polygonia (Comma) c-album (Linnaeus, 1758)

Argynnis (Fabriciana) niobe (Linnaeus, 1758)

Argynnis (Pandoriana) pandora ([Denis & Schiffermüller], 1775)

Argynnis (Speyeria) aglaja (Linnaeus, 1758)

Boloria (Clossiana) euphrosyne (Linnaeus, 1758)

Issoria lathonia (Linnaeus, 1758)

Melitaea (Didymaeformis) cinxia (Linnaeus, 1758)

Melitaea (Didymaeformis) didyma (Esper, [1779])

Melitaea (Didymaeformis) fascelis (Fabricius, 1787)

Melitaea (Cinclidia) (phoebe) punica Oberthür, 1876

Melitaea (Cinclidia) (phoebe) phoebe (Goeze, 1779)

Melitaea (Mellicta) athalia (Rottemburg, 1775)

Family: SATYRIDAE Boisduval, 1848

Melanargia galathea (Linnaeus, 1758)

Melanargia (Turcargia) larissa (Geyer, [1828])

Hipparchia (Parahipparchia) pellucida (Stauder, 1924)

Hipparchia syriaca (Staudinger, 1871)

Chazara (Neochazara) anthe (Hoffmannsegg, 1804)

Chazara bischoffi (Herrich-Schäffer, [1846])

Chazara briseis (Linnaeus, 1764)

Pseudochazara (Achazara) anthelea (Hübner, [1824])

Pseudochazara mamurra (Herrich-Schäffer, [1846])

Pseudochazara mniszecii (Herrich-Schäffer, [1851])

Hyponephele lupina (Costa, [1836])

Hyponephele lycaon (Rottemburg, 1775)

Maniola jurtina (Linnaeus, 1758)

Coenonympha arcania (Linnaeus, 1761)

Coenonympha pamphilus (Linnaeus, 1758)

Esperarge clymene (Fabricius, 1787)

Lasiommata maera (Linnaeus, 1758)

Lasiommata megera (Linnaeus, 1767)

Family: LYCAENIDAE Stephenes, 1829

Quercusia quercus (Linnaeus, 1758)

Callophrys rubi (Linnaeus, 1758)

Satyrrium (Nordmannia) ilicis (Esper, [1779])

Tomares (nogelii) nogelii (Freyer, [1851])

Cupido minimus (Fuessly, 1775)

Cupido osiris (Meigen, [1829])

Celastrina argiolus (Linnaeus, 1758)

Glaucopsyche (Apelles) astraea (Freyer, [1851])

Glaucopsyche alexis (Poda, 1761)

Turanana endymion (Freyer, [1850])

Plebejus (Kretania) carmon (Gerhard, [1851])

Plebejus (Lycaeides) idas (Linnaeus 1761)

Table 1. Geographic information about field studies in Akdağlar, Akdağmadeni (Yozgat).

Number (in Table 3)	Locality	Altitude (m)	Date of collected specimen
1	Aşağıçulhalı-Yukarıçulhalı	1300	10.04.1999
2	Dokuz Village	1300	11.04.1999
3	Aşağıçulhalı, Alıçlı location	1350	24.04.1999
4	Aşağıçulhalı-Kavakalan	1280-1400	01.05.1999
5	Aşağıçulhalı-Ortaköy	1300-1400	05.05.1999
6	Aşağıçulhalı-Kavakalan	1280-1480	06.05.1999
7	Aşağıçulhalı, Alıçlı location	1280-1480	08.05.1999
8	Aşağıçulhalı-Ortaköy	1300-1400	09.05.1999
9	Aşağıçulhalı	1300-1400	13.05.1999
10	Aşağıçulhalı-Ortaköy	1300-1400	13.05.1999
11	Aşağıçulhalı-Dokuz	1300	15.05.1999
12	Ortaköy	1350	16.05.1999
13	Aşağıçulhalı-Ortaköy	1350	19.05.1999
14	Fındıklı, Mountain pass	1300-1400	22.05.1999
15	Derindere-Yaylalı location	1280-1380	23.05.1999
16	Ortaköy	1350	27.05.1999
17	Aşağıçulhalı-Ortaköy	1300-1350	27.05.1999
18	Ortaköy-Pazarcık	1160-1300	29.05.1999
19	Ortaköy	1300	30.05.1999
20	Aşağıçulhalı-Ortaköy	1350	03.06.1999
21	Aşağıçulhalı-Dokuz	1300	15.06.1999
22	Aşağıçulhalı	1300-1500	16.06.1999
23	Aşağıçulhalı, Alıçlı location	1300-1400	19.06.1999.
24	Üçkaraağaç	1300-1400	20.06.1999
25	Ortaköy	1350	23.06.1999
26	Kavakalan	1300-1450	27.06.1999
27	Bozhüyük	1550-1700	29.06.1999
28	Bozhüyük, Nalbant location	1680-1800	29.06.1999
29	Ortaköy, Alıçlı location	1320-1800	01.07.1999
30	Ortaköy, Düldül Fire Tower 1720-	1800	03.07.1999
31	Ortaköy, Düldül Fire Tower	1720-1930	03.07.1999
32	Kavakalan-Evci	1300-1500	04.07.1999
33	Kayakışla	1160-1320	05.07.1999
34	Aşağıçulhalı	1300-1400	06.07.1999
35	Aşağıçulhalı, Kulat location	1400-1820	10.07.1999
36	Davulbaz	1400-1500	11.07.1999
37	Kızılciova, Nalbant Hill	2000-2100	14.07.1999
38	Kızılciova	1800-2100	14.07.1999
39	Aşağıçulhalı, Alıçlı location	1280-1480	08.08.1999
40	Nusret Fire Tower	1500-1700	29.07.2000
41	Nusret Fire Tower	1700-1800	29.07.2000
42	Fındıklı, Mountain pass	1350-1750	30.07.2000
43	Ortaköy, Düldül Fire Tower	1700-1930	01.08.2000

Plebejus (Plebejides) sephirus (Frivaldzky, 1835)

Plebejus argus (Linnaeus, 1758)

Polyommatus (Albulina) loewii (Zeller, 1847)

Polyommatus (Aricia) eumedon (Esper, [1780])

Polyommatus (Aricia) torulensis s Hesselbarth & Siepe, 1993

Polyommatus (Aricia) anteros (Freyer, [1838])

Polyommatus (Aricia) agestis ([Denis & Schiffermüller], 1775)

Polyommatus (Admetusia) alcestis (Zerny, 1932)

Polyommatus (Admetusia) demavendi (Pfeiffer, 1938)

Polyommatus (Agrodiaetus) menalcas (Freyer, [1837])

Table 2. Number of species and rates of Lepidoptera families in Akdağlar (Akdağmadeni, Yozgat).

Family	Number of species	Rate (%)
Papilionidae	4	3.3
Pieridae	17	14
Libytheidae	1	0.8
Argynnidae	19	15.7
Satyridae	18	14.9
Lycaenidae	48	39.7
Hesperiidae	14	11.6
Total	121	100

Table 3. Identification of species and localities number (from Table 1) in Akdağlar.

Species	Localities number
<i>Papilio machaon</i>	35, 1♂; 41, 2♂.
<i>Iphiclides podalirius</i>	20, 1♂; 25, 2♂; 29, 2♂; 42, 1♂.
<i>Zerynthia deyrollei</i>	12, 1♂; 17, 3♂; 18, 9♂, 2♀.
<i>Parnassius mnemosyne</i>	14, 2♀, 1♂; 15, 2♂; 18, 1♂; 27, 1♂; 30, 3♂.
<i>Leptidea duponcheli</i>	3, 1♂; 4, 6♂; 6, 5♂; 9, 1♂; 11, 1♂; 12, 5♂; 14, 3♂; 20, 1♂; 39, 1♂; 40, 3♀; 42, 1♂.
<i>Leptidea sinapis</i>	3, 7♂; 4, 9♂; 6, 5♂; 8, 4♂, 2♀; 11, 7♂; 12, 4♂; 14, 2♂; 15, 6♂; 17, 3♂; 20, 4♂; 22, 5♂; 23, 2♀; 24, 1♂; 25, 3♂, 1♀; 26, 2♂; 28, 1♀; 29, 1♂; 30, 2♀; 32, 2♂; 35, 2♂, 1♀; 36, 4♂; 38, 1♀; 42, 1♂.
<i>Anthocharis cardamines</i>	2, 2♂; 3, 6♂, 1♀; 4, 8♂, 3♀; 6, 1♂; 8, 5♂, 1♀; 9, 3♂; 11, 5♂, 1♀; 12, 2♂, 2♀; 13, 5♂; 14, 4♂, 3♀; 17, 1♂; 18, 1♀; 23, 1♂, 2♀; 25, 1♂, 2♀; 29, 1♂.
<i>Anthocharis damone</i>	3, 1♂; 4, 1♂.
<i>Anthocharis gruneri</i>	2, 1♂; 3, 4♂, 1♀; 4, 6♂; 6, 4♂; 8, 2♂, 1♀; 11, 3♂; 12, 1♂; 13, 1♂.
<i>Aporia crataegi</i>	24, 1♀; 29, 1♂; 28, 1♂; 38, 1♂.
<i>Euchloe ausonia</i>	24, 3♀; 31, 1♀.
<i>Pieris ergane</i>	4, 1♂; 12, 3♂; 23, 1♀; 34, 1♂.
<i>Pieris pseudorapae</i>	3, 1♂; 6, 2♂, 4♀; 11, 1♂; 12, 5♂, 1♀; 13, 1♀; 14, 6♂, 1♀; 23, 1♀; 24, 1♀; 28, 2♀; 29, 1♂; 31, 3♂, 3♀; 32, 2♀; 36, 3♂, 3♀; 38, 1♂, 2♀; 42, 1♂; 43, 1♂. Note: The first record for Yozgat fauna.
<i>Pieris rapae</i>	6, 1♂; 11, 4♀; 12, 3♀; 18, 1♂; 20, 1♂, 1♀; 23, 1♂; 25, 2♀; 26, 2♀; 27, 1♀; 29, 2♀; 30, 4♀; 33, 3♀; 34, 1♀; 35, 1♂.
<i>Pieris brassicae</i>	6, 2♂; 8, 4♂; 12, 4♂; 13, 1♂; 14, 2♂; 17, 1♂; 23, 1♂; 27, 1♀; 28, 1♀; 29, 1♀; 30, 2♂, 2♀; 32, 1♂; 33, 2♂; 35, 2♀; 36, 2♂.
<i>Pontia edusa</i>	1, 5♂; 2, 2♂; 3, 1♀; 4, 1♂; 8, 1♂; 18, 1♂, 1♀; 24, 1♂; 25, 1♂; 31, 2♂, 2♀; 32, 1♀; 33, 4♂; 35, 1♀; 38, 1♀; 41, 2♂; 42, 2♂; 43, 1♂.
<i>Colias aurorina</i>	37, 1♂.

Table 3. Contd.

<i>Colias crocea</i>	3, 2♀; 5, 2♂; 11, 3♂; 18, 1♂; 23, 1♂, 1♀; 29, 1♀; 29, 1♂, 3♀; 31, 3♂, 5♀; 36, 2♂, 1♀; 37, 1♂, 2♀; 38, 4♂, 8♀; 40, 1♀; 43, 3♂, 3♀.
<i>Colias alfacariensis</i>	6, 2♂; 12, 4♂; 14, 2♂; 28, 1♀; 31, 2♂; 36, 2♂; 40, 1♀; 41, 1♂, 1♀; 43, 4♂, 5♀.
<i>Gonepteryx farinosa</i>	40, 1♂.
<i>Gonepteryx rhamni</i>	2, 4♂; 3, 6♂; 4, 1♂; 6, 1♂; 11, 1♂; 12, 1♂; 22, 1♂, 1♀; 25, 1♂; 35, 1♂; 36, 1♂.
<i>Libythea celtis</i>	1, 7♂; 2, 3♂; 3, 1♂; 35, 1♂.
<i>Limenitis reducta</i>	35, 1♀; 36, 1♂. Note: The first record for Yozgat fauna.
<i>Nymphalis antiopa</i>	2, 1♀; 6, 1♀.
<i>Nymphalis polychloros</i>	1, 1♀; 6, 1♀; 35, 1♀. Note: The first record for Yozgat fauna.
<i>Aglais urticae</i>	1, 1♂; 3, 1♂; 18, 2♀; 23, 1♀; 24, 1♀; 25, 1♀; 26, 1♀; 27, 1♂; 31, 3♀; 35, 1♂; 36, 2♀; 37, 1♂, 2♀; 42, 1♂; 43, 1♂.
<i>Inachis io</i>	1, 1♀; 12, 1♂; 31, 2♂; 35, 2♀; 38, 1♂; 37, 1♀.
<i>Vanessa atalanta</i>	13, 1♂.
<i>Vanessa cardui</i>	13, 2♀; 15, 1♀; 30, 1♂; 35, 5♀; 37, 1♀; 43, 1♀.
<i>Polygonia c-album</i>	3, 2♀; 8, 1♂; 14, 2♀; 38, 1♂. Note: The first record for Yozgat fauna.
<i>Argynnis niobe</i>	22, 1♂; 23, 4♂; 27, 1♂; 29, 2♂; 35, 1♂; 38, 2♂.
<i>Argynnis pandora</i>	18, 1♀; 23, 1♂, 1♀; 24, 1♀; 26, 1♀; 28, 1♀; 29, 2♂; 31, 1♂; 32, 1♂; 34, 1♀; 35, 2♂; 36, 1♂, 2♀; 40, 1♂; 42, 1♂.
<i>Argynnis aglaja</i>	29, 1♂; 32, 1♂; 35, 1♂; 43, 3♂.
<i>Boloria euphrosyne</i>	15, 1♂; 23, 2♂; 24, 1♂; 25, 1♂; 29, 1♂; 30, 1♂; 38, 1♂. Note: The first record for Yozgat fauna.
<i>Issoria lathonia</i>	1, 4♂; 2, 6♂; 3, 4♂, 1♀; 6, 3♂; 7, 2♂; 8, 4♂; 9, 2♂; 11, 4♂; 12, 3♂; 14, 2♂; 15, 5♂; 16, 1♂; 18, 2♂; 19, 1♂; 20, 2♂; 22, 1♂; 23, 1♂, 2♀; 24, 3♂, 1♀; 25, 1♀; 28, 2♂; 29, 4♂, 6♀; 31, 2♀; 32, 1♀; 33, 2♂; 35, 5♂, 3♀; 36, 5♀; 38, 3♂, 2♀; 40, 1♂; 41, 3♂; 43, 1♂.
<i>Melitaea cinxia</i>	11, 4♂; 12, 2♂; 13, 7♂; 14, 4♂; 15, 4♂, 1♀; 17, 2♂, 1♀; 18, 2♂, 1♀; 20, 1♂, 1♀; 22, 1♂; 23, 1♂; 24, 4♂, 1♀; 25, 1♂; 28, 3♂, 3♀; 27, 3♂; 29, 3♂, 2♀; 33, 4♂, 2♀; 37, 1♂; 38, 5♂, 3♀.
<i>Melitaea didyma</i>	43, 1♂.
<i>Melitaea fascelis</i>	32, 1♂.
<i>Melitaea punica</i>	11, 2♂; 12, 1♂; 13, 1♂; 14, 1♂; 23, 2♂; 24, 1♂; 33, 1♂.
<i>Melitaea phoebe</i>	9, 1♂; 11, 3♂; 13, 2♂; 16, 1♂; 22, 2♂; 24, 2♂, 1♀; 25, 1♂; 29, 1♂.
<i>Mellicta athalia</i>	30, 2♂, 1♀; 37, 2♂, 2♀.
<i>Melanargia galathea</i>	24, 1♂; 25, 1♂, 1♀; 26, 1♂; 27, 1♂; 29, 3♂; 32, 2♂; 33, 1♂, 1♀; 34, 3♂; 35, 1♂, 4♀; 40, 3♂; 41, 3♂; 42, 1♂.

Table 3. Contd.

<i>Melanargia larissa</i>	26, 1♂; 29, 1♂; 32, 2♂; 33, 2♂, 3♀; 34, 1♂, 1♀; 38, 4♂; 40, 1♂; 41, 3♂; 43, 2♂.	
<i>Hipparchia pellucida</i>	35, 1♀; 36, 1♀.	
<i>Hipparchia syriaca</i>	35, 2♂.	
<i>Chazara anthe</i>	27, 1♂; 36, 1♂.	
<i>Chazara bischoffi</i>	33, 1♂.	
<i>Chazara briseis</i>	31, 1♀; 33, 1♂, 3♀; 36, 2♂, 3♀; 37, 1♀; 40, 3♂; 41, 2♂; 42, 2♂; 43, 3♂, 3♀.	
<i>Pseudochazara anthelea</i>	31, 1♀; 32, 5♂, 3♀; 33, 2♀; 34, 1♀.	
<i>Pseudochazara mamurra</i>	38, 1♂.	Note: The first record for Yozgat fauna.
<i>Pseudochazara mniszecii</i>	26, 4♂; 29, 7♂; 32, 2♂; 33, 1♂; 34, 6♂, 3♀; 43, 2♀.	
<i>Hyponephele lupina</i>	29, 1♀; 35, 1♀; 40, 3♀, 2♂; 41, 2♂, 3♀; 42, 2♂; 43, 3♂, 3♀.	
<i>Hyponephele lycaon</i>	32, 1♂; 34, 2♂; 35, 2♂; 38, 2♂; 40, 2♀; 42, 3♀, 2♂.	
<i>Maniola jurtina</i>	6, 2♂; 22, 1♂; 23, 4♂; 1♀; 24, 7♂; 25, 6♂; 26, 1♂; 29, 5♂; 28, 1♂; 33, 7♂, 1♀; 35, 2♀; 36, 4♂; 42, 2♂.	
<i>Coenonympha arcania</i>	22, 1♂; 23, 2♂; 24, 2♂, 1♀; 25, 3♂; 26, 2♂, 1♀; 29, 2♀; 35, 3♀.	Note: The first record for Yozgat fauna.
<i>Coenonympha pamphilus</i>	4, 2♂; 6, 2♂; 7, 3♂; 9, 2♂; 11, 6♂; 12, 2♂; 14, 2♂; 15, 1♂; 16, 3♂; 23, 2♂; 24, 4♂; 28, 1♂; 27, 2♂; 29, 1♂; 31, 5♂; 38, 2♂.	
<i>Esperarge clymene</i>	24, 3♂; 27, 1♂; 29, 2♂; 34, 2♀.	
<i>Lasiommata maera</i>	31, 1♂; 37, 1♂.	Note: The first record for Yozgat fauna.
<i>Lasiommata megera</i>	15, 1♂; 21, 1♂; 23, 1♂, 1♀; 28, 2♂; 37, 2♂.	
<i>Quercusia quercus</i>	31, 1♂.	
<i>Callophrys rubi</i>	3, 1♀; 4, 7♀; 6, 3♀; 7, 2♀; 8, 5♀; 9, 2♀; 13, 4♀; 14, 3♀.	
<i>Satyrrium ilicis</i>	26, 2♀; 29, 4♂; 32, 2♂; 33, 5♂; 34, 1♂.	
<i>Tomares nogelii</i>	11, 1♂; 13, 1♂; 14, 2♂; 15, 2♂; 17, 2♂; 20, 2♂, 1♀.	
<i>Cupido minimus</i>	18, 2♂; 20, 3♂; 22, 1♂; 23, 1♂; 28, 2♂.	Note: The first record for Yozgat fauna.
<i>Cupido osiris</i>	9, 2♂, 2♀; 12, 1♂; 13, 1♂, 1♀; 15, 1♂; 16, 2♂, 3♀; 20, 1♂, 1♀; 23, 5♂, 1♀; 24, 2♀; 25, 5♂, 2♀; 26, 5♂, 2♀; 27, 5♂; 29, 3♂; 31, 4♂, 5♀; 32, 1♂, 3♀; 33, 3♂; 34, 1♀; 35, 1♂; 36, 6♂, 1♀.	
<i>Celastrina argiolus</i>	4, 2♂.	Note: The first record for Yozgat fauna.
<i>Glaucopteryx astraea</i>	4, 7♂; 6, 2♂; 8, 2♂; 9, 5♂; 10, 8♂; 11, 7♂; 12, 2♂; 14, 1♂; 16, 1♂; 28, 1♂; 36, 3♂.	
<i>Glaucopteryx alexis</i>	6, 5♂; 8, 2♂; 10, 4♂; 11, 5♂; 12, 8♂; 13, 1♂; 14, 3♂; 23, 1♀; 24, 1♂.	Note: The first record for Yozgat fauna.
<i>Turanana endymion</i>	36, 1♂.	
<i>Plebejus carmon</i>	26, 1♂, 2♀; 34, 1♀; 35, 1♂; 37, 2♀.	
<i>Plebejus idas</i>	29, 2♂; 31, 5♂; 37, 1♂; 38, 2♂; 40, 2♂; 42, 1♂.	
<i>Plebejus sephirus</i>	17, 1♂; 22, 1♂; 23, 1♂; 26, 1♂; 36, 3♂, 1♀; 38, 4♂.	
<i>Plebejus argus</i>	14, 1♂, 1♀; 24, 1♀; 26, 1♂; 30, 1♂; 36, 1♂; 37, 10♂; 40, 2♂.	
<i>Polyommatus loewii</i>	33, 1♂.	

Table 3. Contd.

<i>Polyommatus eumedon</i>	25, 1♀; 27, 1♂; 31, 1♂; 37, 4♂.	
<i>Polyommatus torulensis</i>	35, 1♂.	Note: The first record for Yozgat fauna.
<i>Polyommatus anteros</i>	12, 1♂, 1♀; 17, 1♀; 23, 1♂; 25, 1♂, 1♀; 28, 1♂; 43, 2♂.	
<i>Polyommatus agestis</i>	7, 1♂; 9, 3♂; 11, 6♂; 12, 4♂; 13, 2♂; 14, 4♀; 15, 1♂; 16, 1♂; 18, 1♀; 23, 1♂; 33, 3♀; 42, 2♂; 43, 1♂.	
<i>Polyommatus alcestis</i>	40, 3♀; 42, 2♀.	
<i>Polyommatus demavendi</i>	40, 3♀; 42, 2♀.	
<i>Polyommatus menalcas</i>	41, 3♀; 42, 2♀.	
<i>Polyommatus hopfferi</i>	43, 2♂.	
<i>Polyommatus mithridates</i>	41, 3♀; 42, 2♀.	
<i>Polyommatus ripartii</i>	26, 1♀; 32, 2♂; 33, 1♀; 36, 8♂, 1♀; 38, 2♀; 40, 2♂; 41, 3♂; 42, 2♂; 43, 3♂.	
<i>Polyommatus actis</i>	34, 1♂; 36, 1♂; 37, 3♂.	Note: The first record for Yozgat fauna.
<i>Polyommatus eurypilus</i>	26, 4♂; 32, 2♂, 1♀; 34, 1♂; 36, 4♂; 40, 1♂.	Note: The first record for Yozgat fauna.
<i>Polyommatus firdussii</i>	29, 1♂; 36, 5♂; 43, 1♂.	
<i>Polyommatus iphigenia</i>	37, 1♂; 38, 2♂.	
<i>Polyommatus schuriani</i>	33, 1♂.	Note: The first record for Yozgat fauna.
<i>Polyommatus wagneri</i>	37, 1♂; 43, 1♂.	
<i>Polyommatus poseidon</i>	36, 1♂.	Note: The first record for Yozgat fauna.
<i>Polyommatus bellis</i>	11, 4♂; 13, 2♂; 14, 1♂, 1♀; 17, 2♀; 22, 4♂; 23, 4♂; 25, 1♂; 31, 4♂, 1♀.	
<i>Polyommatus bellargus</i>	6, 1♂; 12, 3♂; 14, 1♀; 15, 1♂; 22, 2♂; 23, 2♂; 25, 1♀; 26, 2♂, 1♀; 27, 1♀; 29, 1♂; 31, 7♂, 1♀; 35, 1♂; 36, 2♂, 1♀.	Note: The first record for Yozgat fauna.
<i>Polyommatus ossmar</i>	40, 1♀.	
<i>Polyommatus dophnis</i>	41, 3♂, 1♀;	
<i>Polyommatus amandus</i>	24, 1♂; 36, 1♂.	Note: The first record for Yozgat fauna.
<i>Polyommatus dorylas</i>	38, 1♂; 41, 2♂; 42, 2♂.	Note: The first record for Yozgat fauna.
<i>Polyommatus cornelius</i>	9, 1♂; 11, 1♂; 14, 2♂, 1♀; 20, 1♀; 22, 1♂; 23, 1♂; 33, 1♂, 1♀; 42, 1♂.	
<i>Polyommatus thersites</i>	9, 1♂; 11, 2♂, 1♀; 13, 2♂; 14, 1♀; 22, 1♂; 24, 2♂, 1♀; 25, 3♂; 26, 1♂; 28, 1♂; 29, 1♂; 31, 2♂; 33, 1♂; 38, 1♀; 40, 1♂; 42, 2♂.	
<i>Polyommatus eroides</i>	41, 3♀; 42, 2♀.	
<i>Polyommatus icarus</i>	9, 4♂; 11, 7♂; 12, 4♂; 14, 1♂; 15, 1♂; 18, 1♂; 23, 3♂; 24, 7♂; 25, 2♂; 26, 3♂; 28, 1♂; 29, 2♂; 31, 4♀; 33, 5♂, 1♀; 34, 2♂; 35, 1♂, 1♀; 36, 2♂; 38, 2♂, 1♀; 40, 5♂, 2♀; 41, 1♂; 42, 3♂, 3♀; 43, 3♂.	
<i>Lycaena alciphron</i>	11, 1♀; 23, 2♂, 1♀; 29, 3♂; 31, 1♀; 33, 2♂.	
<i>Lycaena tityrus</i>	11, 3♂; 12, 2♂; 15, 1♂; 29, 1♀; 33, 1♂; 42, 3♂, 1♀.	
<i>Lycaena candens</i>	38, 7♂; 36, 1♂; 37, 2♂; 38, 1♂, 3♀.	Note: The first record for Yozgat fauna.
<i>Lycaena virgaureae</i>	38, 1♂.	Note: The first record for Yozgat fauna.
<i>Lycaena phlaeas</i>	3, 1♀; 7, 2♀; 8, 1♀; 14, 2♀; 26, 1♀; 33, 2♀.	
<i>Lycaena thersamon</i>	12, 1♂; 14, 1♂; 23, 1♂; 30, 1♂; 43, 1♂.	

Table 3. Contd.

<i>Carcharodus lavatherae</i>	28, 1♀.	
<i>Carcharodus orientalis</i>	17, 1♀.	Note: The first record for Yozgat fauna.
<i>Carcharodus alceae</i>	8, 1♂; 11, 1♂; 16, 1♂.	Note: The first record for Yozgat fauna.
<i>Erynnis marloyi</i>	6, 1♂.	
<i>Erynnis tages</i>	11, 1♂; 12, 1♂; 13, 1♀; 14, 3♂, 1♀; 15, 8♂, 3♀; 16, 1♂; 29, 1♀; 30, 1♀; 38, 2♂.	
<i>Pyrgus armoricanus</i>	14, 3♂, 3♀; 15, 1♀; 23, 1♂.	
<i>Pyrgus melotis</i>	4, 3♂; 6, 1♀; 9, 1♀; 11, 1♂, 1♀; 12, 6♂; 13, 2♂; 14, 2♀; 15, 3♂, 1♀; 16, 2♂.	
<i>Pyrgus serratulae</i>	22, 1♂; 23, 1♂; 28, 1♂; 31, 1♂; 33, 1♂.	
<i>Pyrgus sidae</i>	22, 1♂; 24, 1♂; 26, 1♂; 27, 1♂; 38, 2♂.	Not: The first record for Yozgat fauna.
<i>Spialia orbifer</i>	14, 2♂; 15, 2♂; 16, 3♂; 22, 1♂; 25, 2♂; 26, 1♂; 32, 2♂.	
<i>Spialia phlomidis</i>	32, 1♀.	
<i>Ochlodes venatus</i>	24, 1♂; 29, 1♂; 34, 1♂.	
<i>Thymelicus lineolus</i>	23, 1♂; 27, 1♂; 34, 1♂.	
<i>Thymelicus sylvestris</i>	24, 5♂, 1♀; 25, 4♂; 26, 2♂, 1♀; 28, 2♂, 2♀; 29, 1♂; 31, 2♂; 32, 1♂; 34, 1♀; 35, 1♂; 36, 1♂; 37, 1♂; 38, 2♂, 2♀; 42, 1♂; 43, 2♂.	

Polyommatus (Agrodiaetus) hopfferi (Gerhard, [1851])
Polyommatus (Agrodiaetu) mithridates (Staudinger, 1878)
Polyommatus (Admetusia) ripartii (Freyer, [1830])
Polyommatus (Agrodiaetus) actis (Herrich-Schäffer, [1851])
Polyommatus (Agrodiaetus) eurypilos (Gerhard, [1851])
Polyommatus (Agrodiaetus) firdussii (Forster, 1956)
Polyommatus (Agrodiaetus) iphigenia (Herrich-Schäffer, [1847])
Polyommatus (Agrodiaetus) schuriani (Rose, 1978)
Polyommatus (Agrodiaetus) wagneri (Forster, 1956)
Polyommatus (Agrodiaetus) poseidon (Herrich-Schäffer, [1851])
Polyommatus (Cyaniris) bellis (Freyer, [1842])
Polyommatus (Lysandra) bellargus (Rottemburg, 1775)
Polyommatus (Lysandra) ossmar (Gerhard, [1851])
Polyommatus (Meleageria) dophnis ([Denis & Schiffermüller], 1775)
Polyommatus (Plebicula) amandus (Schneider, 1792)
Polyommatus (Plebicula) dorylas ([Denis & Schiffermüller], 1775)
Polyommatus (Sublysandra) cornelius (Freyer, [1850])
Polyommatus (Thersitesia) thersites (Canterer, [1835])
Polyommatus eroides (Fruvaldsky, 1835)
Polyommatus icarus Rottemburg, 1775
Lycaena (Alciphronia) alciphron (Rottemburg, 1775)
Lycaena (Loweia) tityrus (Poda, 1761)
Lycaena (Palaeochrysophanus) candens (Herrich-Schäffer, [1845])
Lycaena (Heodes) virgaureae (Linnaeus, 1758)

Lycaena phlaeas (Linnaeus, 1761)
Lycaena (Thersamonia) thersamon (Esper, [1784])
 Superfamily: HESPERIOIDEA Latreille, 1809
 Family: HESPERIIDAE Latreille, 1809
Carcharodus (Lavatheria) lavatherae (Esper, [1783])
Carcharodus (Reverdinus) orientalis Reverdin, 1913
Carcharodus alceae (Esper, [1780])
Erynnis (Hesperopegasus) marloyi (Boisduval, [1834])
Erynnis tages (Linnaeus, 1758)
Pyrgus armoricanus (Oberthür, 1910)
Pyrgus melotis (Duponchel, [1834])
Pyrgus serratulae (Rambur, [1839])
Pyrgus sidae (Esper, [1784])
Spialia (Neaspialia) orbifer (Hübner, [1823])
Spialia phlomidis (Herrich-Schäffer, [1845])
Ochlodes venatus (Bremer & Grey, [1852])
Thymelicus lineolus (Ochsenheimer, 1808)
Thymelicus sylvestris (Poda, 1761)

DISCUSSION

According to literature review, the Lepidoptera fauna of Turkey consists of 5282 species (Koçak and Kemal, 2012). In previous, studies 49 species in study area and 114 species have been identified in the province of Yozgat.

This is the first comprehensive study to determine the Lepidoptera fauna of Akdağlar (Akdağmadeni in Yozgat province). In this study, 121 lepidopteran species belong to seven families identified. These families and number of

Table 4. The distribution of species according to families and super families.

Superfamily	Family	Records for Study area according to literature	Records for Yozgat province according to literature	Identified in Study area	New for (Akdağlar) Akdağmadeni District	New for Yozgat province	Total
Papilionoidea	Papilionidae	3	5	4	2	-	5
	Pieridae	11	16	17	2	1	17
	Libytheidae	-	1	1	1	-	1
	Argynnididae	7	17	19	14	4	21
	Satyridae	11	21	18	7	3	24
	Lycaenidae	13	41	48	38	14	55
Hesperioidea	Hesperiidae	4	13	14	10	3	16
Total	7 Family	49 Species	114 Species	121 Species	74 Species	25 Species	139 Species

species were: *Papilionidae* (4); *Pieridae* (17); *Libytheidae* (1); *Argynnididae* (19); *Satyridae* (18); *Lycaenidae* (48) and *Hesperiidae* (14). All of these species were reported previously for different parts of Turkey. The 74 out of 121 species which were identified in this study are first records for the Lepidoptera fauna of Akdağmadeni and 25 of them are first records for Yozgat province (Table 4).

On the other hand, according to the literature, three taxa have been described from Yozgat: "*Parnassius mnemosyne angorae* Bryk and Eisner, 1931"; "*Eumenis briseis hyperleuca* Verity, 1937" and "*Lysandra albicans parabellargus* Verity, 1939". However, none of them has valid name of any taxon today.

For proper and efficient sampling, Lepidoptera species were collected in different localities possessing, different vegetation types (agricultural crops to Pinus and Quercus forests) and altitudes (1160 to 2100 m). In this study, it is clear that all these characteristics (locality, vegetation type, altitude and date) have an effect on distribution of living organisms, including butterflies.

Due to the flora and fauna, Akdağmadeni appeared as the richest region between districts of Yozgat. It is clear that borrower have forests and limited animal husbandry. In other districts, large extent of agriculture led to the destruction of the natural environment. Taken into account the numbers of species in other neighboring provinces, this result was obtained from the 139 species expected to increase new studies carried out in the region.

In conclusion, this study indicates that insect diversity is quite high in Yozgat. New studies considering insect orders should be carried out before destroying the agricultural and forest ecosystems. Scientific and taxonomic studies about Yozgat are very limited in number. This study makes contribution to the Lepidoptera fauna of Yozgat province.

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